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FY10.2

U.S. Department
of Transportation

Office of the Secretary
of Transportation

PROGRAM SOLICITATION

Small Business Innovation Research Program (SBIR)

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Closing Date: May 14, 2010

Small Business Innovation Research (SBIR) Program Office, RVA-21
John A. Volpe National Transportation Systems Center
U.S. Department of Transportation
Research and Innovative Technology Administration
55 Broadway
Cambridge, MA 02142-1093

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Technical questions pertaining to the FY10.2 DOT SBIR solicitation research topics must be submitted to the SBIR Program Office by email to Linda.Duck@dot.gov . Technical questions submitted after the April 23, 2010 may not be answered before the solicitation closing date.

DOT PROGRAM SOLICITATION FOR SMALL BUSINESS INNOVATION RESEARCH

I. PROGRAM DESCRIPTION

A. Introduction

This solicitation for research proposals is issued by the U.S. Department of Transportation (DOT) pursuant to the Small Business Innovation Development Act of 1982, P.L. 97-219 (codified at 15 U.S.C. 638) as amended by the Small Business Innovation Research (SBIR) Program, Extension, P.L. 99-443 which extended the program through September 30, 1993. On October 28, 1992, through the Small Business Innovation Research and Development Act of 1992 (P.L. 102-564), Congress reauthorized and extended the SBIR program for another seven years (2000). Subsequently, on December 21, 2000, through the Small Business Reauthorization Act of 2000 (P.L. 106-554) Congress again reauthorized the SBIR program. The Program is currently operating under a continuing resolution.

The SBIR Program encourages small businesses to engage in research or research and development (R/R&D) that has the potential for commercialization to meet Federal research or research and development objectives.

The goals and objectives of the SBIR Program are:

(1) To stimulate technological innovation;
(2) To use small business to meet Federal R/R&D needs;
(3) To increase private sector commercialization of innovations derived from Federal R/R&D; and
(4) To foster and encourage participation by minority and disadvantaged persons in technological innovation.

In consonance with the statutory obligations of the Act, the DOT has established a Small Business Innovation Research Program hereinafter referred to as the DOT SBIR Program.

The purpose of this solicitation is to invite small businesses with their valuable resources and creative capabilities to submit innovative research proposals that address high priority requirements of the DOT.

B. Three-Phase Program

The DOT SBIR Program is a three-phase process.

THIS SOLICITATION IS FOR PHASE I PROPOSALS ONLY.

Phase I. Phase I provides support for the conduct of feasibility-related experimental or theoretical research or R/R&D efforts on research topics as described herein. The dollar value of the proposal may be up to $100,000 unless otherwise noted and the period of performance is generally six months. The basis for award will be the scientific and technical merit of the proposal and its relevance to DOT requirements and priorities. **Only awardees in Phase I are eligible to participate in Phase II which is by invitation only.**

Phase II. Phase II is the principal R/R&D effort having a period of performance of approximately two years with a dollar value of up to $750,000 unless otherwise noted. DOT will accept Phase II proposals under the DOT SBIR Program only from firms which have previously received a DOT Phase I award. Phase II proposals must be prepared in accordance with guidelines provided by DOT to Phase I awardees receiving an invitation to submit a Phase II proposal. Phase II awards will be based on the results of Phase I efforts, technical merit, agency priority and commercial applications, and the availability of appropriated funds to support the Phase II effort. Special consideration may be given to proposals that have obtained commitments for follow-on funding from non-Federal sources for Phase III.

Phase III. SBIR Phase III award logically follows SBIR Phase II and may be a continuation of the work under Phase II or commercialization of the research under the previous SBIR phases. Like SBIR Phase II, the award process is exempted from FAR subpart 5.2 requirements. Only those vendors who were awarded both a SBIR Phase I and Phase II may receive a SBIR Phase III award. There is no limit on the performance period length or dollar value of a SBIR Phase III, and the small business size limits for Phase I and Phase II awards do not apply to SBIR Phase III awards.

Phase III is to be conducted by the small business with either:

- non-Federal funds to pursue commercial

applications of R/R&D funded in Phases I and II, or

- non-SBIR Government funded contracts for continued research or products or processes intended for use by the U.S. Government.

C. Eligibility

Each concern submitting a proposal must qualify as a small business at the time of award of Phase I and Phase II contracts. In addition, **the primary employment of the principal investigator must be with the small business firm at the time of contract award and during the conduct of the proposed research** unless otherwise approved by the Contracting Officer. Primary employment means that more than one-half of the principal investigator's time is spent with the small business. Also for both Phase I and Phase II, the R/R&D work must be performed in the United States. "United States" means the 50 states, the Territories and possessions of the United States, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and the District of Columbia.

All types of small business organizations may submit proposals, including high technology, R&D, manufacturing, and service firms. Companies with outstanding scientific or engineering competence in highly specialized product, process or service areas may wish to apply their expertise to the research topics in this solicitation through a laboratory prototype. Ideally, the research should make a significant contribution to the solution of an important transportation problem and provide the small business concern with the basis for new products, processes, or services.

D. General Information

This is a solicitation for Phase I R/R&D proposals on advanced, innovative concepts from small business firms having strong capabilities in applied science or engineering.

The Phase I R/R&D proposals shall demonstrate a sound approach to the investigation of an important transportation-related scientific or engineering problem categorized under one of the topics listed in Section VI.

A proposal may respond to any of the research topics listed in Section VI, but must be limited to one topic. The same proposal may not be submitted under more than one topic. An organization may, however, submit separate proposals on different topics, or different proposals on the same topic, under this solicitation. Where similar research is discussed under more than one topic, the offeror shall choose that topic which appears to be most relevant to the offeror's technical concept.

The proposed research must have relevance to the improvement of some aspect of the national transportation system or to the enhancement of the ability of an operating element of the DOT to perform its mission.

Proposals shall be confined principally to scientific or engineering research, which may be carried out through construction and evaluation. Proposals must be for R/R&D, particularly on advanced or innovative concepts, and shall not be for incremental or scaled-up versions of existing equipment or the development of technically proven ideas. Proposals for the development of already proven concepts toward commercialization, or which offer approaches already developed to an advanced prototype stage or for market research shall not be submitted. Commercialization is the objective of Phase III, in which private capital or non-SBIR funds are to be used to continue the innovative research supported by DOT under Phase I and Phase II.

The proposal shall be self-contained and checked carefully by the offeror to ensure that all preparation instructions have been followed. (See Proposal Checklist, Appendix D).

Please address **general inquiries, not pertaining to this solicitation** on the U.S. DOT SBIR Program to:

DOT SBIR Program Office , RVA-21
John A. Volpe National Transportation Systems Center
U.S. Department of Transportation
Research and Innovative Technology Administration
55 Broadway
Cambridge, MA 02142-1093
Telephone: (617) 494-2051
Fax: (617) 494-2370

Volpe Center Website: http://www.volpe.dot.gov/sbir

II. DEFINITIONS

A. **Research or Research and Development (R/R&D)**

R/R&D means any activity which is:

(1) A systematic, intensive study directed toward greater knowledge or understanding of the subject studied;

(2) A systematic study directed specifically toward applying new knowledge to meet a recognized need; or

(3) A systematic application of knowledge toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.

B. Small Business Concern

A small business concern is one that at the time of award of Phase I and Phase II contracts meets all of the following criteria:

(1) Is organized for profit, with a place of business located in the United States, which operates primarily within the United States or which makes a significant contribution to the United States economy through payment of taxes or use of American products, materials or labor;

(2) Is in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture, there can be no more than 49 percent participation by business entities in the joint venture;

(3) Is (i) at least 51 percent owned and controlled by one or more individuals who are citizens of the United States or permanent resident aliens in the United States, (ii) at least 51% owned and controlled by another business concern that is itself at least 51% owned and controlled by individuals who are citizens of, or permanent resident aliens in the United States; or (iii) a joint venture in which each entity to the venture must meet the requirements of either (i) or (ii) of this section;

(4) Has, including its affiliates, not more than 500 employees.

C. Socially and Economically Disadvantaged Small Business Concern

A socially and economically disadvantaged small business concern is one that is at least 51% owned and controlled by one or more socially and economically disadvantaged individuals, or an Indian tribe, including Alaska Native Corporations (ANCs), a Native Hawaiian Organization (NHO), or a Community Development Corporation (CDC). Control includes both strategic planning (as that exercised by boards of directors) and the day-to-day management and administration of business operations. See 13 CFR 124.109, 124.110, and 124.111 for special rules pertaining to concerns owned by Indian Tribes (including ANCs), NHOs, or CDCs, respectively.

D. Women-Owned Small Business Concern

A woman-owned small business concern is one that is at least 51% owned and controlled by a woman or women. Control includes both the strategic planning (as that exercised by boards of directors) and the day-to-day management and administration of business operations.

E. Veteran Owned Small Business

A veteran-owned small business concerns is one that is at least 51 percent owned and controlled by one or more veterans (as defined at 38 U.S.C. 101(2) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans, and the management and daily business operations of which are controlled by one or more veterans.

F. Subcontract

Subcontract means any agreement, other than one involving an employer-employee relationship, entered into by a Federal Government funding agreement awardee calling for supplies or services required solely for the performance of the original funding agreement.

G. Historically Underutilized Business Zone (HUBZone)

A HUBZone small business concern is one that meets the following criteria:

1. Located in "historically underutilized business zone" or HUBZone area located in one or more of the following:

   a) A qualified census tract (as defined in Section 42(d)(5)(i)(l) of the Internal Revenue Code of 1986);

   b) A qualified "non–metropolitan county" (as defined in Section 143(k)(2)(B) of the Internal Revenue Code of 1986) with a median household income of less than 80% of the state median household income or with an unemployment of not less than 140% of the statewide average based on U.S. Department of Labor recent data; or

   c) Lands within the boundaries of Federally recognized Indian reservations.

2. Owned and controlled by one or more U.S. citizen(s).

3. At least 35% of its employees must reside in a HUBZone.

H. Service Disabled Veteran Owned Concern

A service disabled veteran-owned small business concerns is one that is at 51% unconditionally and directly owned by one or more service-disabled veterans defined in 13 C.F.R 125.29. In the case of a concern which is a corporation, at least 51% of the aggregate of all stock outstanding and at least 51% of each class of voting stock outstanding must be unconditionally owned by one or more service-disabled veterans.

III. PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

A. Proposal Submission Requirements

- Each proposal shall not exceed 25 pages (regular size type – no smaller than 10 point font size – single or double spaced, standard 8 ½" by 11" pages) including proposal cover sheet, contract pricing proposal, and all enclosures or attachments.
- Proposals must be a PDF file and submitted online. **Proposals will not be accepted via email.**
- No duplicate proposals shall be sent by any other means.
- Proposals may only be submitted online, a link to the web page can found here: http://www.volpe.dot.gov/sbir/current.html Instructions are included on the submission page.
- Proposals must be received no later than 11:59 P.M. EST on May 14, 2010
- The proposal file name shall contain eight (8) characters; the first three shall be the topic number you are proposing to (i.e., FH3), and the remaining five characters shall be a unique abbreviation of your company's name.

Proposals will be available to only the team of U.S. DOT engineers and/or scientists responsible for evaluating your proposal.

B. Proposal Cover Sheet

Complete the Proposal Cover Sheet in Appendix A as Page one of your proposal. All pages shall be numbered consecutively, beginning with the Proposal Cover Sheet.

C. Project Summary

Complete the form in Appendix B as Page two of your proposal. The Project Summary shall include a technical abstract with a brief statement of the problem or opportunity, project objectives, and description of the effort. Anticipated results and potential applications of the proposed research shall also be summarized in the space provided. The Project Summary of successful proposals may be published by the DOT and, therefore, shall not contain classified or proprietary information. The technical abstract must be limited to 200 words in the space provided on the Project Summary form.

D. Technical Content

Submitted proposals must include the following:

(1) **Identification and Significance of the Problem or Opportunity.** The specific technical problem or innovative research opportunity addressed and its potential benefit to the national transportation system shall be clearly stated.

(2) **Phase I Technical Objectives.** State the specific objectives of the Phase I R/R&D effort, including the technical questions it will try to answer to determine the feasibility of the proposed approach.

(3) **Phase I Work Plan.** Describe the Phase I R/R&D plan. The plan shall indicate what will be done, where it will be done, and how the R/R&D will be managed or directed and carried out. Phase I R/R&D shall address the objectives and the questions cited in (2) above. The methods planned to achieve each objective or task shall be discussed in detail, including the level of effort associated with each task.

(4) **Related Research or R&D.** Describe significant R/R&D that is directly related to the proposal including any conducted by the project manager/principal investigator or by the proposing firm. Describe how it relates to the proposed effort, and any planned coordination with outside sources. The offeror must persuade reviewers of his or her awareness of key recent R/R&D conducted by others in the specific topic area.

(5) **Key Personnel and Bibliography of Directly Related Work.** Identify key personnel involved in Phase I including their directly related education, experience, and bibliographic information. Where vitae are extensive, summaries that focus on the most relevant experience or publications are desired and may be necessary to meet proposal page limitations.

(6) **Relationship with Future Research and Development.**

(a) State the anticipated results of the proposed approach if the project is successful (Phase I and Phase II).

(b) Discuss the significance of the Phase I effort in providing a foundation for Phase II R/R&D effort.

(7) **Facilities.** Provide a detailed description, availability and location of instrumentation and physical facilities proposed for Phase I.

(8) **Consultants.** Involvement of consultants in the planning and research stages of the project is permitted. If such involvement is intended, it shall be described in detail.

(9) **Potential Applications.** Briefly describe:

(a) Whether and by what means the proposed project appears to have potential commercial application.

(b) Whether and by what means the proposed project appears to have potential use by the Federal Government.

(10) **Similar Proposals or Awards. Warning — while it is permissible, with proposal notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous Federal program solicitations, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award.**

If a firm elects to submit identical proposals or proposals containing a significant amount of equivalent work under other Federal program solicitations, a statement must be included in each such proposal indicating:

(a) The name and address of the agencies to which proposals were submitted or from which awards were received;

(b) Date of proposal submission or date of award;

(c) Title, number, and date of SBIR Program solicitations under which proposals were submitted or awards received;

(d) The applicable research topics for each SBIR proposal submitted or award received;

(e) Titles of research projects; and

(f) Name and title of Project Manager or Principal Investigator for each proposal submitted or award received.

E. Contract Pricing Proposal

A firm fixed price Phase I Contract Pricing Proposal (Schedule 1) must be submitted in detail as shown in Appendix C. Note: firm fixed price is the type of contract to be used for Phase I SBIR awards. Some cost breakdown items of Appendix C may not apply to the proposed project. If such is the case, there is no need to provide information for each and every item. It is important, however, to provide enough information to allow the DOT to understand how the offeror plans to use the requested funds if the contract is awarded. Phase I contract awards may include profit.

F. Central Contracting Registration (CCR) and Data Universal Numbering System (DUNS) Identification Number

Since October 1, 2003, it is federally mandated that any business wishing to do business with the Federal Government under a Federal Acquisition Regulation (FAR)-based contract must be registered in CCR before being awarded a contract. You can find more information on CCR and the registration process in their handbook, http://www.ccr.gov/handbook.asp. You can register online at http://www.ccr.gov by clicking on "Start New Registration" if you already have a DUNS number. If you need a DUNS number, you can find instructions at http://fedgov.dnb.com/webform/displayHomePage.do

A firm must note its DUNS identification number on Appendix C, Contract Pricing Proposal, Schedule 1. This number is assigned by Dun & Bradstreet, Inc.

G. Prior SBIR Phase II Awards

If the small business concern has received more than 15 Phase II awards in the prior five fiscal years, submit name of awarding agency, date of award, funding agreement number, amount, topic or subtopic title, follow-on agreement amount, source and date of commitment, and current commercialization status for each Phase II. (This required proposal information shall not be counted toward the proposal 25-page count limitation.)

IV. METHOD OF SELECTION AND EVALUATION CRITERIA

A. General

All Phase I and Phase II proposals will be evaluated and judged on a competitive basis. Initially, all proposals will be screened to determine responsiveness to the solicitation. Proposals that meet the solicitation requirements will be evaluated to determine the most promising technical and scientific approaches. Each proposal will be judged on its own merit. The DOT is under no obligation to fund any proposal or any specific number of proposals on a given topic or subtopic. It may elect to fund several or none of the proposed approaches to the same topic or subtopic.

A Phase II award will be made to the responsive and responsible Offerors whose offers provide the best value to the Government, based on the Technical Proposal and Cost Proposal. While it is the Government's intent to make Phase II awards based upon initial offers, the Government may, nevertheless, determine during the evaluation period that it is necessary to conduct discussions. In that case, the Contracting Officer will proceed to establish a competitive range and conduct negotiations with the firms in that range.

B. Evaluation Criteria

The evaluation process involves the following factors:

(1) Scientific and technical merit and the feasibility of the proposal's commercial potential, as evidenced by:

a) Past record of successful commercialization of SBIR or other research;

b) Existence of Phase III funding commitments from private sector or non-SBIR funding sources; and

c) Presence of other indicators of the commercial potential of the idea.

(2) The adequacy of the work plan and approach to achieve specified work tasks and stated objectives of the proposed effort within budgetary constraints and on a timely schedule.

(3) Qualifications of the proposed principal/key investigator(s) including demonstrated expertise in a disciplinary field related to the particular R/R&D topic that is proposed for investigation.

(4) Adequacy of supporting staff and facilities, equipment, and data for the successful completion of the proposed R/R&D.

C. Prescreening

Each proposal submission will be examined to determine if it is complete and contains adequate technical and pricing data. **Proposals that do not meet the basic requirements of the solicitation will be excluded from further consideration. Each offeror will be notified promptly by email of such action.**

D. Schedule

All DOT evaluations shall be completed and recommendations for award will be submitted to the U.S. DOT SBIR Program Office within eight weeks of the closing date for Phase I proposals.

E. Program Selection

Each of the Department's Operating Administrations will establish technical evaluation teams comprised of federal staff, including engineers and/or scientists and provide written evaluations and recommendations for award to the DOT SBIR Program Director. The DOT SBIR Program Office will post a listing of awards on the webpage: http://www.volpe.dot.gov/sbir.

F. Contact with DOT

Contact with DOT relative to this solicitation during the Phase I proposal preparation and evaluation period is restricted for reasons of competitive fairness. Technical questions pertaining to the FY10.2 DOT SBIR solicitation research topics must be submitted to the DOT SBIR Program Office by e-mail to: Linda.Duck@dot.gov. Technical questions submitted after April 23, 2010 may not be answered before the solicitation closing date.

No information on proposal status will be available until the complete list of FY10.2 Phase I Award Recommendations is posted on the DOT SBIR Program Webpage: http://www.volpe.dot.gov/sbir. For planning purposes the notification of FY10.2 Phase I Award Recommendations are expected to be posted on the DOT SBIR Program web page by 5 PM Eastern Time, on/or about Friday, July 9, 2010. **Phase I proposals which are not included in the list of FY10.2 Phase I Award Recommendations will not receive an**

award. NO WRITTEN CORRESPONDENCE REGARDING PROPOSAL STATUS WILL BE ANSWERED.

After the FY10.2Phase I Award Recommendations are posted on the DOT SBIR Program webpage, a debriefing comprised of the overall comments on the proposal may be provided to the offeror upon request.

Debriefing requests should be submitted to the SBIR Program Contracting Officer by e-mail to: Darren.Shaffer@dot.gov, and must include the offeror's name, address, research topic number, and the proposal identification number assigned on the acknowledgement of receipt card. The identity of the evaluators will not be disclosed.

V. CONSIDERATIONS

A. Awards

The Government anticipates awarding approximately 7 Phase I contracts with the potential for additional awards. The actual number of contract awards, depends on actual funding available and the responses from small business firms to the solicited research topics in Section VI.

All Phase I awards will be firm fixed price contracts and may be up to $100,000 each unless otherwise noted. Phase II awards will be cost-plus-fixed-fee contracts with a value of up to $750,000 each unless otherwise noted. Phase II awardees will be required to have an acceptable accounting system in place to receive a cost-plus-fixed-fee contract. If you have not had an audit of your accounting system, DCAA will conduct an on-site audit prior to any contract award.

Only recipients of Phase I contracts will be eligible to receive a Phase II invitation.

DOT's Operating Administrations contribute to 2.5% of their Extramural Research Budget for SBIR funding. Each Operating Administration's contribution may be used only to support research of concern to that Operating Administration. For example, funds furnished by the Federal Highway Administration (FHWA) may not support research solely of concern to the National Highway Traffic Safety Administration (NHTSA). Based on anticipated funding levels, there may not be adequate funding within the DOT SBIR Program to support Phase I and/or Phase II awards for research which is solely of concern to the following Operating Administrations: Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), Federal Railroad Administration (FRA), Federal Transit Administration (FTA), National Highway Traffic Safety Administration (NHTSA), Research and Innovative Technology Administration (RITA), and Pipeline Hazardous Materials Safety Administration (PHMSA). Phase I and Phase II awards for such research will depend on the actual funding available.

B. Reports

Under Phase I SBIR contracts, 3 reports will be required, consisting of 2 interim letter reports, and a comprehensive final report.

C. Payment Schedule

Payments for Phase I contracts will be made in 3 equal installments upon submission of invoices by the contractor in conjunction with the submission of acceptable reports as described in Paragraph B above.

D. Innovations, Inventions, and Patents

1. **Proprietary Information.** Information contained in the proposals will remain the property of the offeror. The Government may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements.

If proprietary information is provided by a offeror in a proposal which constitutes a trade secret, proprietary commercial or financial information, confidential personal information or information effecting national security, it will be treated in confidence, to the extent permitted by law, provided this information is clearly marked by the offeror with the term "confidential proprietary information" and provided the following legend appears on the title page of the proposal:

> "For any purpose other than to evaluate the proposal, this proprietary information shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part, provided that if a contract is awarded to this offeror as a result of or in connection with the submission of this information, the Government shall have the right to duplicate, use, or disclose the information to the extent provided in the contract. This restriction does not limit the Government's right to use information contained in the document if obtained from another source without restriction. The information subject to this restriction is contained pages _____ of this proposal."

Any other legend may be unacceptable to the Government and may constitute grounds for return of the proposal without further consideration and without assuming any liability for inadvertent disclosure. The Government will limit dissemination of such information to within official channels.

DOT prefers that offerors avoid inclusion of proprietary data in their proposals. If the inclusion of proprietary data is considered essential for meaningful evaluation of a proposal submission, then such data should be provided on a separate page with a numbering system to key it to the appropriate place in the proposal.

2. **Rights in Data Developed under SBIR Contracts**. Rights in technical data, including software developed under any contract resulting from this solicitation, shall remain with the contractor except that the Government shall have the limited right to use such data for Government purposes and shall not release such data outside the Government without permission of the contractor for a period of four years from completion of the project from which the data were generated. However, effective at the conclusion of the four-year period, the Government shall retain a royalty-free license for Federal Government use of any technical data delivered under an SBIR contract whether patented or not.

3. **Copyrights**. With prior written permission of the Contracting Officer, the contractor normally may copyright and publish (consistent with appropriate national security considerations, if any) material developed with DOT support. The DOT receives a royalty-free license for the Federal Government and requires that each publication contain an appropriate acknowledgement and disclaimer statement.

4. **Patents**. Small business firms normally may retain the principal worldwide patent rights to any invention developed with Government support. The Government receives a royalty-free license for Federal Government use, reserves the right to require the patent holder to license others in certain circumstances, and requires that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically. To the extent authorized by 35 U.S.C. 205, the Government will not make public any information disclosing a Government-supported invention for a two-year period to allow the contractor a reasonable time to pursue a patent.

   Awardee shall report inventions to the Department of Transportation (DOT) through the iEdison Invention Reporting System, http://www.iedison.gov. Use of the iEdison System satisfies all invention reporting requirements mandated by any award.

E. Cost-Sharing

Cost-sharing is permitted for Phase II proposals under the topic areas identified in this solicitation; however, cost-sharing is not required nor will it be a factor in proposal evaluations.

F. Profit or Fee

A profit is allowed on awards to small business concerns under the DOT SBIR Program.

G. Joint Ventures or Limited Partnerships

Joint ventures and limited partnerships are permitted provided the entity created qualifies as a small business concern in accordance with the Small Business Act, 15 U.S.C. 631, and the definition included in this solicitation.

H. Research and Analytical Work

1. **For Phase I, a minimum of two-thirds of the research and/or analytical effort must be performed by the proposing firm** unless otherwise approved in writing by the Contracting Officer.

2. **For Phase II, a minimum of one-half of the research and/or analytical effort must be performed by the proposing firm** unless otherwise approved in writing by the Contracting Officer.

I. Contractor Commitments

Upon award of a contract, the awardee will be required to make certain legal commitments through acceptance of numerous contract clauses. The outline that follows is illustrative of the types of clauses to which the contractor would be committed. This list shall not be understood to represent a complete list of clauses to be included in Phase I contracts, nor to be the specific wording of such clauses. A complete copy of the terms and conditions will be provided upon issuance of the model contract for signature prior to award.

1. **Standards of Work.** Work performed under the contract must conform to high professional standards.

2. **Inspection.** Work performed under the contract is subject to Government inspection and evaluation at all times.

3. **Examination of Records.** The Comptroller General (or a duly authorized representative) shall have the right to examine any directly pertinent records of the contractor involving transactions related to this contract.

4. **Default**. The Government may terminate the contract if the contractor fails to perform the work contracted.

5. **Termination for Convenience**. The contract may be terminated at any time by the Government if it deems termination to be in its best interest, in which case the contractor will be compensated for work performed and for reasonable termination costs.

6. **Disputes**. Any dispute concerning the contract which cannot be resolved by agreement shall be decided by the Contracting Officer with right of appeal.

7. **Contract Work Hours**. The contractor may not require an employee to work more than eight hours a day or 40 hours a week unless the employee is compensated accordingly (i.e., overtime pay).

8. **Equal Opportunity**. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.

9. **Affirmative Action for Veterans**. The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era.

10. **Affirmative Action for Handicapped.** The contractor will not discriminate against any employee or applicant for employment because he or she is physically or mentally handicapped.

11. **Officials Not to Benefit**. No member of or delegate to Congress shall benefit from the contract.

12. **Covenant Against Contingent Fees**. No person or agency has been employed to solicit or secure the contract upon an understanding for compensation except bonafide employees or commercial agencies maintained by the contractor for the purpose of securing business.

13. **Gratuities.** The contract may be terminated by the Government if any gratuities have been offered to any representative of the Government to secure the contract.

14. **Patent Infringement**. The contractor shall report each notice or claim of patent infringement based on the performance of the contract.

15. **Procurement Integrity**. Submission of a proposal under this solicitation subjects the offeror to the procurement integrity provision (§27) of the Office of Federal Procurement Policy Act (41 U.S.C. 423). This statute, as implemented by Federal Acquisition Regulation (FAR, 48 CFR) §3.104, prescribes the following conduct by competing contractors during an agency procurement: offering or discussing future employment or business opportunities with an agency procurement official; promising or offering a gratuity to an agency procurement official; and/or soliciting or obtaining proprietary or source selection information regarding the procurement. Violations of the statute may result in criminal and/or civil penalties, disqualification of an offeror, cancellation of the procurement, or other appropriate remedy.

16. **Section 508 Access Board Standards**. All electronic and information technology deliverables rendered must comply with Section 508 of the Rehabilitation Act and the Access Board Standards available for viewing at http://www.section508.gov. Unless otherwise indicated, the contractor represents by signature on a contract that all deliverables will comply with the Access Board Standards.

17. **Government Property.** Equipment either furnished or acquired under this contract is subject to Federal Acquisition Regulation 52.245-1 Government Property (June 2007) clause (and Small Business Innovation Research (SBIR) Program Policy Directive, Section 8 (c).

FAR: https://www.acquisition.gov/far/index.html

SBIR Policy Directive: http://www.sba.gov/aboutsba/sbaprograms/sbir/sbirstir/index.html

18. **Contractor Policy to Ban Text Messaging While Driving**:
a) *Definitions.* The following definitions are intended to be consistent with the definitions in DOT Order 3902.10 and the Executive Order (EO). For clarification purposes, they may expand upon the definitions in the E.O.

"Driving"----
(1) Means operating a motor vehicle on a roadway, including while temporarily stationary because of traffic, a traffic light, stop sign, or otherwise.
(2) It does not include being in your vehicle (with or without the motor running) in a location off the roadway where it is safe and

legal to remain stationary.

"Text messaging" means reading from or entering data into any handheld or other electronic device, including for the purpose of short message service texting, e-mailing, instant messaging, obtaining navigational information, or engaging in any other form of electronic data retrieval or electronic data communication. (See definition in DOT Order 3902.10)

b) In accordance with Executive Order 13513, Federal Leadership on Reducing Text Messaging While Driving, October 1, 2009, and DOT Order 3902.10, Text Messaging While Driving, December 30, 2009, contractors and subcontractors are encouraged to:

(1) Adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers including policies to ban text messaging while driving—

(i) Company-owned or -rented vehicles or Government-owned, leased or rented vehicles; or

(ii) Privately-owned vehicles when on official Government business or when performing any work for or on behalf of the Government.

(2) Conduct workplace safety initiatives in a manner commensurate with the size of the business, such as---

(i) Establishment of new rules and programs or re-evaluation of existing programs to prohibit text messaging while driving; and

(ii) Education, awareness, and other outreach to employees about the safety risks associated with texting while driving.

(c) *Subcontracts.* The Contractor shall insert the substance of this clause, including this paragraph (c), in all subcontracts that exceed the micro-purchase threshold, other than subcontracts for the acquisition of commercially available off-the-shelf items.

J. Additional Information

1. This solicitation is intended for informational purposes and reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting SBIR contract, the terms of the contract are controlling.

2. Before award of an SBIR contract, the offeror shall complete Online Representations and Certifications Application: https://orca.bpn.gov

3. The Government may request the offeror to submit additional management, personnel, and financial information to assure responsibility of the offeror.

4. The Government is not responsible for any monies expended by the offeror before award of any contract.

5. This solicitation is not an offer by the Government and does not obligate the Government to make any specific number of awards. Also, awards under this program are contingent upon the availability of funds.

6. The DOT SBIR Program is not a substitute for existing unsolicited proposal mechanisms. Unsolicited proposals shall not be accepted under the DOT SBIR Program in either Phase I or Phase II. For information pertaining to submission requirements for unsolicited proposals please go to the following web page http://www.volpe.dot.gov/procure/unsolguide.html.

7. If an award is made pursuant to a proposal submitted under this solicitation, the contractor will be required to certify that he or she has not previously been, nor is currently being paid for essentially equivalent work by any agency of the Federal Government.

8. When purchasing equipment or a product with funds provided under the DOT SBIR Program, purchase only American made equipment and products, to the extent possible in keeping with the overall purposes of the program.

9. In accordance with FAR 52.233-2, Service of Protest, the following Service of Protest procedures shall be followed. Protests, as defined in Section 33.101 of the FAR that are filed directly with an agency, and copies of any protests that are filed with the Government Accountability Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgement of receipt from: Orin Cook, DOT/RITA/Volpe Center, 55 Broadway, RVP-31, Cambridge, MA 02142-1093

VI. RESEARCH TOPICS

Phase I research topics for DOT Operating Administrations are listed below. These topics indicate the specific areas for which proposals are to be considered for acceptance by DOT. The topics are not listed in any order of priority. Each proposal must respond to one (and only one) topic as described in this section. A proposal may, however, indicate and describe its relevance to other topics.

DOT OPERATING ADMINISTRATION/TOPIC	**MAXIMUM PHASE I AWARDS**
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION	**2 AWARDS**
[1]10.2-NH1 Driver Detecting Cell Phone Blocker System	2 awards
FEDERAL HIGHWAY ADMINISTRATION	**5 AWARDS**
[2]10.2-FH1 Global Positioning System (GPS) and Related Data Compression Algorithms	1 award
10.2-FH2 Transportation System Performance Measurement Using Existing Loop Infrastructure	2 awards
[3]10.2-FH3 Mobile Device Application Component	2 awards

[1] Phase I may be up to $100,000 and Phase II $400,000
[2] Phase I may be up to $100,000 and Phase II $425,000
[3] Phase I may be up to $100,000 and Phase II $300,000

National Highway Traffic Safety Administration (NHTSA)

10.2-NH1 Driver Detecting Cell Phone Blocker System

With the aim of improving driver safety the federal government, state governments, counties and various corporations have issued cell phone usage bans. These bans differ in the range of which behaviors are limited (Hand held calls, all calls, only text messages). One means to ensure the effectiveness of these bans is to develop a technological solution which prevents drivers from performing functions limited by the applicable ban. Several companies have offered solutions can be used to block or filter cell phone calls/messages; however the implementation of these solutions tends be to done in a crude fashion, such that the phone calls/messages are blocked/filtered under situation other than driving a vehicle. For instance systems may also block communication while riding on a bus/train/bike while as a passenger in a private vehicle, or when the driver's mobile device is being used by a passenger. The act of blocking communication during inappropriate situations is expected to have a huge impact on public acceptance, and prevents the widespread use of cell phone filter/blocking technologies.

Therefore, to reduce cell phone based distracted driving a new type of cell phone filter/blocker technology is needed that has the following attributes:

1. It automatically blocks calls and/or text messages from being sent/received while a driver is in motion.
2. It automatically allows calls/text messages in situations where a driver is not driving (on a train, bus, bike, ferry, while running, while a passenger in a private vehicle).
3. It allows passengers to use a driver's mobile device while a vehicle is in motion.
4. It can be used to maintain compliance for federal workers with President Obama's Executive Order 13513 (Federal Leadership on Reducing Text Messaging While Driving).
5. It complies with FCC regulations, statutes and rules (e.g., allows 911 calls).
6. It is customizable such that the technology solution could maintain compliance with various federal, state and corporate bans.
7. It does not reduce battery life below levels of customer acceptance.
8. It can be implemented with no or little infrastructure changes to public transportation.

The product described will satisfy NHTSA's goal using technology to reduce fatalities by creating a safer driving experience.

Outcomes expected from the Phase 1 include a detailed concept that demonstrates the viability of creating a prototype that satisfies the attributes described above. An ideal Phase 1 effort would also include a demonstration of a prototype with most but not necessarily all of the above functionality described above. Phase 2 efforts include manufacturing and demonstrating a working prototype cell phone filter/blocker system that demonstrates potential for achieving all of the identified attributes.

Federal Highway Administration (FHWA)

10.2-FH1 Global Positioning System (GPS) and Related Data Compression Algorithms

The US Department of Transportation is developing safety services that rely on improved vehicle positioning, navigation, and infrastructure mapping. Radionavigation systems, such as GPS and its augmentation systems, offer highly reliable and highly accurate solutions that cover a significant portion of the country. Benefits from such a service, if widely available to all modes of transportation (rail, aviation, highway, and maritime), range from improving transportation safety through reduced accidents and better infrastructure monitoring to promoting livable communities through improved mapping and control of invasive species.

Accuracies for safety services are as tight as 10-30 cm, absolute position. This does not consider map error or any other error sources that might contribute to errors in the overall position solution. It is expected that the accuracy of a GPS based service will be on the order of 10 cm, 2drms.

Current differential GPS technologies rely on published standards that focus on a dense network of reference stations. The Federal Highway Administration has demonstrated solutions that rely on lower density networks but provide different data to the end user (see http://www.tfhrc.gov/its/ndgps/02110/index.htm and http://www.tfhrc.gov/its/pubs/05034/index.htm for more information). This data includes GPS code and carrier observables, atmospheric delay maps (for both the troposphere and the ionosphere), and integrity. This data allows users to determine the best differential technique for their location, using the optimum set of reference stations and satellite data to develop sub-decimeter navigation solutions within five seconds.

Increasingly, digital telecommunication networks carrying greater quantities of data. This has the potential to impact the overall capability of digital networks, especially wireless, and degrade performance for all users. Since positioning has been identified as a fundamental technology, techniques that ensure timely delivery of supporting data to the vehicle (car, truck, bus, or railcar) are critical to ensuring solutions are available when needed. Thus, this effort seeks to develop a technique that allows flexibility both in how the data is used and in how it can be delivered. GPS data compressed to fit into data in packets of 1000 bits or less and given a high priority on a data network are much more likely to be delivered than larger packets that must compete with other data.

In order to achieve the goals of accuracy, reliable delivery, and flexible application, off- the-shelf algorithms that compress all available GPS observables (both code and carrier for all GPS downlink frequencies), ionospheric delay, tropospheric delay, and additional Global Satellite Navigation Systems (i.e. GLONASS, Galileo) into a compact form to be sent over a limited bandwidth channel at least every three seconds needs to be developed and marketed. Estimates suggest this data should be broadcast as often as every two seconds. Accuracy using some of this data has been demonstrated but full capability offers the potential to establish centimeter level accuracies within five seconds.

The key to providing this level of accuracy to end users is reducing bandwidth currently needed to convey the data to where it is needed.

- In rural areas, the available telecommunication infrastructure is limited due to the cost of deployment and the limited number of users. Thus, when connections are available, high priority data are more likely to be delivered. This has the potential to support collision avoidance systems, roadway maintenance, and asset management. As a specific example, Alaska is looking at GPS guided snowplows that can operate in very low visibility conditions. Keeping these on the road has proven difficult with current techniques, but with a sub-centimeter service, the plow, the plow operator, and the roadside infrastructure would not be at risk from a running-off-the-road incident.

Railroads have implemented limited bandwidth vhf data networks over most of the country for messaging traffic and supporting safety services. Uncompressed, DGPS data would overwhelm the communications system. Compressed, it has the potential to identify track irregularities before they become problems.Implemented as an inter-modal system, this approach has the potential to aid many transportation sectors, increasing safety, improving efficiency, and reducing transportations impact on the environment.

In phase I of this project, development of real time compression and decompression algorithms in a laboratory setting using real time GPS data and ionospheric and tropospheric data will be the goal. More information on available ionosphere and troposphere delay models can be found at:

Troposphere: http://gpsmet.noaa.gov/jsp/index.jsp
Ionosphere: http://www.swpc.noaa.gov/ustec/

In Phase II, integration with an off the shelf tri-frequency GPS receiver and use of the compression/decompression techniques over communications channels used for surface transportation will be demonstrated. This will require algorithms built to industry standards to ensure they will operate fault-free over long periods.

Relationship to FHWA Strategic Objectives

This work directly supports several strategic goals including advancing innovation (by developing and rapidly implementing an innovative solution to improve performance) and improving system performance (by improving highway system reliability).

10.2-FH2 Transportation System Performance Measurement Using Existing Loop Infrastructure

Travel time and origin-destination data and characterization are key to System Performance Measurement. The *objective* of this project is to develop an inductive loop based technology for monitoring the travel time and origin-destination performance of vehicles that augments a Bluetooth based travel time system now under development.

This technology is intended to complement the Bluetooth based travel time and origin-destination technology[1] being developed under a separate SBIR project[2] and being independently explored by various universities and state DOTs. Inductive loop signature identification and re-identification has several advantages over and disadvantages under the Bluetooth based technology. To their advantage, loop signatures characterize almost 100% of the vehicles traveling over them while Bluetooth technology characterizes none of them. Bluetooth always correctly re-identifies vehicles while loops may mismatch or miss signature matches. Loop signature technology works best where there are already preexisting loops for either signal control, weigh in motion systems, permanent count stations or speed measurement with only minimal additional loops needed for completing the system performance measurement network. Bluetooth sensors can be deployed in any location with power access and many without power access. Loops give a very accurate estimate of total vehicle count while Bluetooth only gives a 5 to 10% sample. Because of this, the two systems are complementary rather then competitive. Together, they would allow a very accurate estimate of surface transportation system performance which is a key USDOT goal.

The objective of measuring travel time has several aspects. First, the vehicle signature must be accurately yet anonymously sensed at the first location. For the purposes of this SBIR "accurately sensed" includes providing an accurate classification of the vehicle according to the FHWA classes[3] based on the vehicle signature. Second, the vehicle must be accurately yet anonymously sensed at a second location. Third, communications must make it possible to accurately match the two loop signatures and the elapsed time between the two identifications while providing anonymity to the driver. Fourth, it must be possible to assemble these identifications into travel time and origin-destination data for purposes of developing System Performance Measurement. This must be done in near real time if the data is to be available for real time transportation systems developed with FHWA funding such as Adaptive Control System (ACS) and ACS-Lite.

[1]Wasson, Jason S.; Sturdevant, James R.; Bullock, Darcy M., "Real-Time Travel Time Estimates Using Media Access Control Address Matching", Institute of Transportation Engineers, ITE Journal, June 1, 2008.

[2]FHWA SBIR 08-FH2, "Research and Development of Anonymous Traffic Probes for Travel Time and Origin-Destination using Bluetooth IDs."
[3]Traffic Monitoring Guide, FHWA-PL-01-021, http://www.fhwa.dot.gov/ohim/tmguide/index.htm.

The software for processing the unique signatures, tracking the travel time measurements from the unique signatures, and communicating them from location to location may be proprietary. However, to make the system useful to a wide variety of Transportation Management Centers and Real Time Control Systems such as ACS and ACS-Lite, there must be an open source software package which can take these signatures and corresponding vehicle classifications and calculate travel time and origin-destination data as well as providing information availability to local Advanced Transportation Controllers. The open source requirement is to ensure full and continued evaluation of the algorithms. Communications should be encrypted with the GNU OpenPGP to facilitate data privacy and prevention of tampering.

http://www.gnupg.org/
http://www.ietf.org/rfc/rfc4880.txt

In Phase I, field tests must demonstrate that the technology can sense and track vehicles between two points with vehicle classification. Statistical characterizations of the number of vehicles that can be identified at the first location and then re-identified at the second location must be made. These should be compared to ground truth against the total vehicle population traveling between the two points. This will demonstrate the potential of the new technology. The loop signature sensor hardware may be a device previously developed by the SBIR proposer or one of its partners or may be developed or developed further under this project.

Phase II would develop the new or enhanced technology and then demonstrate the prototype at a sequence of intersections and freeway locations. The technology should be evaluated at a sequence of instrumented stations for establishment of a rigorous statistical measurement of the accuracy of the technology against "ground truth" in the real world during a variety of weather conditions. The University of California-Path Not heard ot this campus, Virginia Tech, Purdue, and Texas A&M have sensor test facilities which might be suitable for such tests. A demonstration of the basic effectiveness of the concept will also be conducted at the TFHRC intelligent intersection. (note: The TFHRC intersection uses 2070 ATC units so use of another class such as regular ATC's or NEMA controllers might require demonstration of one of the alternative sites. Compatibility with 2070 ATC, ATC or NEMA standard traffic signal controller will be part of the Phase II test.

NOTE: *The specific technology(ies) for the communications have not been specified. Several traffic signal control companies and traffic sensor manufacturers already have communications systems or the proposer may develop their own.*

Preferred strengths for the project team include experience with inductive loop signatures, vehicle classification, vehicle identification, communications of traffic data, system integration, traffic engineering, and experience on sensor applications, software development and system communications. Also preferred are experience with traffic data collection and analysis for systems validation. Inductive loop sensor manufacturing capability or partnership with an inductive loop sensor manufacturer is preferred. Understanding of Bluetooth data collection systems and how they work with or complement Inductive Loop Signature systems is needed.

Relationship to FHWA Strategic Objectives (from : FHWA STRATEGIC PLAN Publication No. FHWA-PL-08-027, October 2008, http://www.fhwa.dot.gov/policy/fhplan.html)

System Performance - Objective 1 - Performance Indicators - Develop and use a nationally recognized, credible, balanced, and readily digestible suite of national highway system performance indicators, focusing on the NHS, Strategic Highway Network, and other major arterials and intermodal connectors. (Strategic Plan Page 11)

- **Strategy** - 1.2 Develop a robust system for collecting, analyzing, and integrating the data necessary to calculate, forecast, and display the selected performance indicators and identify critical performance gaps.

- **Strategy** - 1.3 Develop methods for effectively communicating system performance information to partners, Congress, and the media.

Note: The outcome of this study will be a robust system for collecting, analyzing, and integrating and communicating system performance.

Objective 2 - Performance Improvements: Make significant improvements to critical aspects of highway system performance (safety, congestion, reliability, infrastructure condition, air quality, user satisfaction, and emergency response). (Page 12 of Strategic Plan)

- 2.2 Evaluate causes of congestion and develop deployable tools, options, and solutions that reduce congestion.

- 2.4 Improve highway system reliability through operations, intermodal integration, and increased multijurisdictional institutional capacity and cooperation.

Note: Only Bluetooth and loop signature identification/re-identification systems have the current potential to evaluate causes of congestion. System performance measurement at a reasonable price point for deployment is a critical key to assist in creating solution strategies. Such systems would enable metropolitan areas with comprehensive network level traffic signal management systems to monitor and maintain system performance. These systems would also allow urban and rural jurisdictions to provide access to real-time travel conditions information, such as 511 travel information systems and dynamic message signs where loop based systems currently exist.

These outcomes cannot be reached unless systems can reliably and accurately detect and characterize vehicle segment traffic travel times and road segment to road segment origin-destination movements in all weather and lighting conditions. Inductive loop signature technologies are fully all weather and software would allow them to emulate probe vehicle data with 100% sampling. The desired outcome of this study is hardware and software which will enable implementing these strategies.

Relationship to fuel consumption and emissions - Improved highway system performance in safety, congestion, and reliability, directly caused reductions in fuel consumption, CO2 emissions and air quality for the same VMT.

Note: Providing real time travel time measurements and origin destination data to traffic control systems would allow construction of new kinds of algorithms for Adaptive Control Systems (ACS) and Traffic Responsive Control Systems that cannot exist with current technology.

10.2-FH3 Mobile Device Application Component

Builders of the IntelliDrive System anticipate that components of applications enabled by the system will run on mobile devices such as cellular telephones or personal navigation devices. A number of technical and policy questions come to mind.

- How do we communicate requirements to the app development community?
- How does the app development and release process work? iPhone, Droid, Windows Mobile cellular phones? Garmin, TomTom, personal navigation devices?

- What are mobile phones capable of doing? Can applications run continuously? How good is the positioning service? How often can the positioning service be sampled? How would the app affect battery life? Will the positioning service still work when the phone is in a pocket or purse? Would you be able to gather useful information in a subway tunnel?
- Can you determine if the mobile phone is in a vehicle? Can it identify the type of vehicle as a person changes modes?
- How would apps connect into or out of the IntelliDrive System to supply data or gain access to data?
- Do we approve or sanction particular apps? How do we insure quality?
- How do we select or approve apps to carry an "IntelliDrive" approval seal?

As a precursor to developing equipment for a large-scale demonstration, we will explore some of the capabilities of cell phone apps and the process for developing them in a trial. We would like to engage a developer with experience in enterprise cellular phone or personal navigation device applications.

Outcomes expected from Phase 1 include a detailed outline of the process for designing and deploying a mobile device application, and a discussion of the expected answers to the questions above.

Phase 2 efforts would include creating a trial application component and deploying it in a multiple unit test. The vendor would select a mobile device platform and then develop an actual application. The trial would involve developing a "data out" application to gather and deliver multi-model trip paths. (This application component would not include an active Human-Machine Interface. There are a number of questions about HMI's especially in vehicles that can be explored in follow-on activities.) The trip path files will be delivered to the Trip Path Accumulator component in the Michigan Test Bed using the cell phone or personal navigation device's existing data transport mechanism.

VII. SUBMISSION FORMS AND CERTIFICATIONS

1.	PROPOSAL COVER SHEET	Appendix A
2.	PROJECT SUMMARY	Appendix B
3.	CONTRACT PRICING PROPOSAL	Appendix C
4.	PROPOSAL CHECKLIST (Do not include with your proposal – for your use only)	Appendix D

APPENDIX A

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SOLICITATION NO. DTRT57-10-R-SBIR2
FY10.2

PROPOSAL COVER SHEET

Project Title _____
Research Topic No. _____ Research Topic Title _____
Submitted by: Name _____
Address_____
City _____ State _____ Zip + _____

Amount Requested (Phase I) $ _____ Proposed Duration_____
(May be up to $100,000 unless otherwise indicated) (in months) (Not to exceed six months)

By signing and submitting this coversheet under Solicitation No. DTRT57-10-R-SBIR.2, Topic No. _____, certifies that:

1. The above firm ____is ____ is not / a small business firm and meets the definition stated in Section II.B; and that it meets the eligibility requirement in Section I.C.

2. The above firm _____does_____does not / qualify as a socially or economically disadvantaged small business as defined in Section II.C. (For statistical purposes only.)

3. The above firm_____does_____does not / qualify as a women-owned small business as defined in Section II.D. (For statistical purposes only.)

4. The above firm_____does_____does not / qualify as a HUBZone-owned and meet the definition as stated in this Section II. F (For statistical purposes only)

5. The above firm and/or Principal Investigator _____has, ____ has not / submitted proposals containing the same, a significant amount of equivalent or overlapping work to other Federal agencies. (If yes, identify proposals in the Section III. D.10. "Similar Proposals".)

6. The above firm and/or Principal Investigator _____has, ____has not / been funded under any other Federal grant, contract or subcontract program solicitations, or has received other federal awards containing a significant amount of essentially equivalent work or overlapping work. (If yes, identify proposals in the Section III. D.10. "Awards".)

7. The above firm ____will, _____will not / permit the Government to disclose the title and technical abstract of your proposed project, plus the name, address, and telephone number of the Corporate/Business Official and Principal Investigator of your firm, if your proposal is recommended for award, to any party that may be interested in contacting you for further information?

By signing and submitting this proposal in response to Solicitation No. DTRT57-10-R-SBIR.2, Topic No. _____, I hereby certify that to the best of my knowledge that (1) the statements above are true, accurate and complete, (2) the statements herein (excluding scientific hypotheses and scientific opinions) are true, accurate and complete and (3) the text and graphics in this proposal as well as any accompany documents, unless otherwise indicated, are original work of the firm above. The undersigned understands that willfully making a false statement to or concealing material fact from the Department of Transportation is a criminal offense (U.S. Code, Title 18, Section 1001).

Principal Investigator
Name _____
Title _____
Signature_____Date_____
Telephone No._____
E-mail_____

Corporate/Business Official
Name _____
Title _____
Signature_____Date____
Telephone No._____
E-mail_____

PROPRIETARY NOTICE (IF APPLICABLE, SEE SECTION V.D.1)

APPENDIX B

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SOLICITATION NO. DTRT57-10-R-SBIR2
FY10.2
PROJECT SUMMARY

Name and Address of Offeror	**FOR DOT USE ONLY**
	Proposal No.

Name and Title of Principal Investigator

Project Title

Research Topic No.	Research Topic Title

Technical Abstract (Limited to two hundred words in this space only with no classified or proprietary information/data).

Anticipated Results/Potential Commercial Applications of Results.

Provide key words (eight maximum) description of the project useful in identifying the technology, research thrust, and/or potential commercial application.

APPENDIX C

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
CONTRACT PRICING PROPOSAL
FY10.2

Topic No:				
Offerors Project Title:				
Name of Offeror:				
Address:				
City, State, Zip:				
Offerors Point of Contact:				
Title of Offerors Point of Contact:				
Telephone:				
E-mail:				
DUNS No. If available:				
Tax Identification No. If available:				
To best of my knowledge and belief, cost and pricing data are accurate, complete, and current as of the date of signature below.				
THE COST PROPOSAL MUST BE SIGNED BY A RESPONSIBLE OFFICIAL OF THE FIRM. Printed Nme_____ Title_____ Signature_____ Date_____				
1	**Total Firm Fixed Price Proposal Amount**			$_____
2.	**Direct Material Costs**			
	a. Purchased Parts			$_____
	b. Subcontracted Items			$_____
	c. Other			$_____
	(1) Raw Materials			$_____
	(2) Standard Commercial Items			$_____
	Total Direct Materials (TDM)			$_____
3	**Material Overhead (TDM x Rate %)**			
		Rate		Amount
	Total Material Overhead (TMO)	_____%		$_____
4	**Total Materials (TDM + TMO)**			$_____
5	**Direct Labor**			
	Type / Personnel	Hours	Rate ($ / Hr)	Cost
				$_____
				$_____
				$_____
	Total Direct Labor (TDL)			$_____
6	**Labor Overhead** (TDL x Overhead Rate)			
		Rate		Amount
	Total Labor Overhead (TLO)	_____%		$_____

Topic No:					
Offerors Project Title:					
Name of Offeror:					
7	**Labor: Fringe Benefits** (TDL x Benefit Rate)				
		Rate (% or $ / Hr)			Amount
	Fringe Benefits				$_____
8	**Total Labor (TDL + TLO + Fringe)**				Amount $_____
9	**Direct Costs: Special Testing** (Include field work at Government installations)				
	Item & Anticipated Use		Unit Cost		Estimated Cost
					$_____
					$_____
					$_____
					$_____
	Estimated Total Special Testing				$_____
10	**Direct Costs: Special Equipment**				
	Item & Anticipated Use		Unit Cost		Amount
					$_____
					$_____
					$_____
	Estimated Total Special Equipment				$_____
11	**Direct Costs: Travel**				
	Travel Location	Mode of Travel	# of Trips	Per Diem	Amount
					$_____
					$_____
	Travel				$_____
12	**Direct Costs: Consultant Services**				
	Description of Service				Amount
					$_____
					$_____
	Total Consultant Services				$_____
13	**Direct Costs: Other Direct Costs (ODC) not previously accounted for.**				
	Item & Anticipated Use		Unit Cost if applicable		Amount
					$_____
					$_____
					$_____
	Total Other Direct Costs				$_____
14	**Total Direct Costs (TDC) (Sums of Line No. 9 – 13)**				Amount
					$_____
15	**General & Administrative Expense ((Total Materials + Total Labor + Total ODC) x Rate)**				
			Rate %		Amount
					$_____
16	**Royalties**				
	Description				Amount
	Total				$_____
17	**Total Cost (Sums of lines 4, 8, 14, 15 & 16)**				Amount $_____
18	**Profit (Total Cost x Profit Rate)**				

Topic No:			
Offerors Project Title:			
Name of Offeror:			
		Rate %	Calculated Amount
		_____	$_____
19	**Total Firm Fixed Price Amount (Total Cost + Profit)**	$_____	
20	An executive agency of the United States Government ____has _____ has not performed any review of your accounts or records in connection with any other Government prime contract or subcontract within the past twelve months? If one has, then provide a copy of the audit report and the name and address of the reviewing office, name of the individual and telephone/extension below _____ _____		
21	Government property ____is _____is not required in the performance of this proposal? If yes, identify. _____ _____		
22	Government contract financing _____is, _____ is not required to perform this proposed contract? If yes, specify type as advanced payments or progress payments.		

APPENDIX D

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SOLICITATION NO. DTRT57-10-R-SBIR2
FY10.2
PROPOSAL CHECKLIST

This is a CHECKLIST OF REQUIREMENTS for your proposal. Please review the checklist carefully to assure that your proposal meets the DOT SBIR requirements. Failure to meet these requirements may result in your proposal being returned without consideration. (See Sections III of this Solicitation). **Do not include this checklist with your proposal.**

____ 1. The proposal reflects the fact that for Phase I a minimum of two-thirds (and for Phase II a minimum of one-half) of the research and/or analytical effort will be performed by the proposing firm as required (see Sections V.H.1 and V.H.2) and the primary employment of the principal investigator (for both Phase I and Phase II) must be with the small business firm at the time of award and during the conduct of the proposed research as required (see Section I.C).

____ 2. The proposal is 25 PAGES OR LESS in length. This limitation does not apply to the additional information required by Section III.G

____ 3. The proposal is limited to only ONE of the research topics in Section VI

____ 4. The proposal budget may be up to $100,000 unless otherwise indicated and duration does not exceed six months.

____ 5. The technical abstract contains no proprietary information, does not exceed 200 words, and is limited to the space provided on the Project Summary sheet (Appendix B).

____ 6. The proposal contains no type smaller than ten point font size.

____ 7. The COVER SHEET (Appendix A) has been completed and is PAGE one of the proposal.

____ 8. The PROJECT SUMMARY (Appendix B) has been completed and is PAGE two of the proposal.

____ 9. The TECHNICAL CONTENT of the proposal begins on PAGE three and includes the items identified in SECTION III.D of the Solicitation.

____ 10. The Contract Pricing Proposal (Appendix C) has been signed included as the last section of the proposal.

____ 11. The additional information on prior Phase II awards, if required, in accordance with Section III.G.

____ 12. The proposal must be a PDF file and submitted online by 11:59 p.m., May 14, 2010. **Proposals may only be submitted online, a link to the web form can be found here: http://www.volpe.dot.gov/sbir/current.html. Proposals received via email will not be accepted and rejected. Do not send duplicate proposals via email.** Instructions for online submission are included on the submission page.